

# **Lesson - 9**

## **Halving and Doubling Principles**

### **9.1 INTRODUCTION**

For requiring accuracy and speed in shorthand, it is essential that the shorthand outlines should be written as brief as possible. Halving principle has been adopted to achieve the same objective. In the previous lesson you have learnt about the consonants L & SH. In shorthand if all the consonants are used in full form, the outlines will be too lengthy and time consuming. With this end in view, various devices through which brief shorthand outlines can be written have been introduced.

The Doubling Principle is the fastest mechanism by which many words/phrases can be written in shorthand speedily. Much time gets wasted while lifting our pen & writing another stroke. Doubling principle is time saving device, we double the size of a stroke without lifting our pen/pencil.

### **9.2 OBJECTIVES**

At the end of this lesson you will be able to :-

- define the halving and doubling principle;
  - identify the sounds for which halving and doubling principle is adopted;
  - list the cases where halving principle is not applied;
-

- undertake repeated practice with the help of relevant exercise;
- use the doubling principle in phraseography.

### 9.3 HALVING PRINCIPLE

Writing a consonant stroke in half the length is called halving principle. In Pitman Shorthand the strokes are halved in length for the addition of 'T' or 'D'. The halving principle is adopted to write the outlines quickly and rapidly.

#### (i) Halving for 't' only

Light strokes in one syllable words without any final hook or joined diphthong are halved for the addition of 't only' thus -

.....	tight	.....	light	.....	opt
.....	chart	.....	pat		

#### Vocalizing half length forms

Full length	Half length
..... fie	..... fight
..... off	..... oft
..... seek	..... sect

#### Position of half length strokes (forms)

Upward or downward half length characters are not written through the line. The half length stroke in third place vowel is written on the line and the vowel is indicated at the third place; thus :-

..... pit	..... lit
..... witness	..... little

#### (ii) Halving for 'D' only

One syllable words having heavy strokes without any final hook or joined

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diphthong are halved for the addition of 'D' only; thus-

..... aged ..... died  
..... bed ..... charged

**(iii) Halving for 't' or 'd'**

(a) Words having more than one syllable are halved either for the addition of 't' or 'd', thus -

..... rabbit	..... credit
..... debate	..... received
..... related	..... current
..... decided	..... indeed

(b) A stroke having final hook or joined diphthong may be halved for the addition of 't' or 'd'; thus-

..... paved	..... pound
..... proud	..... about
..... doubt	..... plant
..... point	..... joint

**(iv) Circle 'S' after half length strokes-**

Circle 'S' at the end of a half length form is read after 't' or 'd'; thus-

..... rift	..... rifts
..... coat	..... coats
..... rent	..... rents
..... hint	..... hints

---

**(v) Half length 'H'**

Half length 'H' when standing alone is written upward; thus-

..... height	..... hot
..... hit	..... hoot

**Halving Principle is not employed in the following cases:**

- (a) In words of more than one syllable when a vowel follows final 't' or 'd', because a final vowel requires a final stroke; thus-

..... pit	but.....pity
..... greed	but.....greedy

- (b) When a triphone immediately precedes 't' or 'd'; thus-

..... fight	but.....fiat
..... died	but.....diadem

- (c) Where a more distinctive outline is obtained by the use of the stroke 't' or 'd'; thus-

..... secret	but.....sacred
..... unavoidable	but.....inevitable
..... hotly	but.....hotel.....

- (d) Upward 'R' standing alone is not halved because the outlines will conflict with Grammalogues 'and' & 'should' e.g.

..... rat	..... rate
..... wrote	..... writ

- (e) After 'N' stroke, 'M' is not halved and after 'M', 'N' stroke is not halved; thus-

..... nominate	..... dominate
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## SHORT FORMS/GRAMMALOGUES

.....quite	..... could	..... accord-ing
..... cared	..... guard	..... great
..... called	..... cold	..... equalled
..... gold	..... build-ing	..... told
..... chaired, cheered	..... that	..... without
..... particular	..... opportunity	
..... child	..... wished	

Practice all the above short forms five lines each.

## DRILL EXERCISE

1. Read and copy five lines of each word-

1. ....
2. ....
3. ....
4. ....

2. (i) blood resembled ploughed aged
- (ii) soft white sided avoid glad
- (iii) pound spot secret deed
- (iv) viewed plates robbed apt effort

3. Write in shorthand five lines of each word-

- (i) argued grade labelled opened land
-

(ii)    grades      duplicate    halt      load      tied

(iii)   freight    weight    coat      tight

(iv)    hunt      beat      raid      party    pat

(i)    .....

(ii)   .....

(iii)   .....

(iv)   .....

4.    Read, copy and practice five times each sentence.

1.    .....

.....

2.    .....

.....

3.    .....

.....

4.    .....

.....

1.    He accelerated the speed of his car to escape from the police.

2.    The seat for which they were fighting was occupied by anybody else.

3.    Mohan will help you in your business and if it is possible for you then  
you should meet him.

4.    The report submitted by the officer was placed on the table and no notice  
was followed on it.

---

**6. Write in shorthand the following sentences five times each.**

1. The judge rejected his appeal because he could not see any argument in it.
2. If you want to become a literary person, you should cultivate the habit of reading.
3. He has set his business very efficiently.
4. They have sold the number of tickets for the charity show to be held in Delhi.

1. ....  
.....
2. ....  
.....
3. ....  
.....
4. ....  
.....

---

**INTEXT QUESTIONS 9.1**

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1. Fill in the blanks :-
    - (i) Halving a stroke indicates the addition of .....
    - (ii) ..... R is not halved when standing alone.
    - (ii) Half length 'H' when standing alone is written .....
  2. Write the shorthand outlines of the following words :-
    - (i) opt
-

- (ii) abode
  - (iii) fight
  - (iv) bent
  - (v) secret
  - (vi) extend
- 

## **9.4 STROKES ‘M’ ‘N’ ‘L’ ‘R’**

There are a few additional applications of the halving principle :-

- a) Strokes M, N, L and R (Downward) are thickened and halved for the addition of 'd'; thus-

..... made	..... mood
..... need	..... designed
..... indicate	..... end
..... field	..... bored
..... bold	..... dared
..... skilled	..... card

- (b) The half-length form ..... ld, standing alone, is used only for words beginning with a vowel; thus-

..... ailed	..... old
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The words like ..... sold..... styled

..... holed, must be written with the full strokes.

- (c) When a vowel comes in between l-d or r-d, both the consonants will be written in full e.g.

..... pallied	but..... paled
---------------	----------------

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..... married                      but..... marred

..... sorrowed                      but..... sword

..... hurried                      but..... hoard

- (d) The signs..... (downward cannot be halved to represent the syllable-lerd, rerd respectively because the forms ..... (downward) are used for representing ld, rd, as explained above.

- (e) The strokes MP, MB, NG cannot be halved for the addition of either 't' or 'd' unless they are hooked initially or finally; thus-

..... impute                      ..... imbued

..... belonged      but..... hampered

..... rampart      ..... lingered

### Strokes LT and RT

- (a) The signs for rt and lt are generally written upward, thus-

..... part                      ..... pelt

..... fort                      ..... fault

but ..... 'lt' is written downward after ..... n and

..... ng; thus-

..... inlet                      ..... ringlet

and it is written downward after ..... 'w' if no vowel follows 'l;' thus-

..... dwelt      but ..... twilight

---

- (b) The light sign ..... r (upward) may be used for rd when it is not convenient to write ..... rd (downward) thus-

..... lard                      ..... coloured

..... preferred                      ..... deferred

- (c) After the shun hook..... st may be written either downward or upward; thus-

..... receptionist                      ..... educationist

## **STROKES OF UNEQUAL LENGTH**

- (a) Strokes of unequal length are not joined but are represented by disjoining half-length 't' or 'd' thus-

..... attitude                      ..... treated

..... rotated                      ..... credited

..... traded                      ..... dictated

- (b) The half-sized stroke is also disjoined in some other cases; thus-

..... aptness                      ..... tightness

..... hesitatingly                      ..... hardness

..... outfit                      ..... indebtedness

- (c) In past tenses 'ted' or 'ded' is always indicated by halving 't' or 'd' respectively; thus-

..... parted                      ..... reported

..... coated                      ..... graded

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## HALVING PRINCIPLE IN PHRASEOGRAPHY

Halving principle in phraseography is used for the following words:-

- |            |          |
|------------|----------|
| a) to      | c) word  |
| b) it      | d) would |
| e) not e.g |          |

..... able to	..... able to make
..... able to have	..... able to speak
..... able to think	
..... I am not	..... you may not
..... I will not	..... you will not
..... this would	..... we would be
..... a few words	..... some words
..... for some time	..... at the same time
..... if it is	..... if it is not
..... if it is to be	..... in which it is

**Note :** 'for' and 'in' are not halved for 'it' in phraseography thus-

..... for it	..... in it
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## SHORT FORMS/GRAMMALOGUES

..... short	..... hand	..... under
..... yard	..... word	..... immediate
..... school	..... schooled	..... spirit

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..... certificate    ..... knowledge    .....acknowledge

..... cannot    ..... gentlemen    ..... gentleman

..... tried    ..... toward    ..... towards

## **DRILL EXERCISE**

1. Practice all the words five lines each given in this lesson.
2. Practice all the phrases and shortforms five lines each given in this section until you are able to write them easily.

### **3. Read and practice five lines of each word in shorthand.**

(i) .....

(ii) .....

(iii) .....

(iv) .....

(v) .....

1. said          signed          bored          borrowed          thronged

2. solid          resumed          boiled          stated          homeguard

3. forfeit          imitate          deducted          frustrated          deduct

4. injured          suited          buried          melody          cautioned

5. heard          treated          exported          retired          recent

### **4. Write in shorthand five lines of each word-**

1. current          agreement          mastered          old          draft

2. skilled          stated          homeland          suited          colt

3. invalid          intruded          witness          sunlight

---

4. pillared surrendered glared answered  
5. treated dictated attitude acquainted honoured

**5. Read and practice one page of each sentence :-**

1. ....  
.....  
2. ....  
.....  
3. ....  
.....  
4. ....  
.....  
5. ....  
.....

**6. Write in shorthand one page of each sentence:**

1. An account with the United Commercial Bank was opened by him so that he may be able to save something for the rainy days.  
2. I have great pleasure to receive the gratitude showered on me by your goodself.  
3. I am not able to pay you such a huge amount at this stage because I have also borrowed some money from my friend which I have to pay in instalments.  
4. The police officer fired in the air to disperse the big mob which had gathered due to some riots in the affected areas.  
5. The men penetrated into the great secrets of the earth, when he tried to find its hidden treasures of gold and diamonds for the purpose of trade.
-

**7. Write in shorthand one page of each sentence:**

1. The Board of Secondary Education has started the vocational course in Shorthand at Senior Secondary level.
2. The report which was sent to the press stated that the allegations made against the Minister are baseless.
3. The prices of essential goods were cut down at the request of the Minister.
4. The delegates were requested to elect their leader with responsibility and give him proper regards.
5. Truth has been divided into three kinds - truth about things, truth of thought about things and truth in the accurate expression of thought about things.

1. ....  
.....
  2. ....  
.....
  3. ....  
.....
  4. ....  
.....
  5. ....  
.....
-

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## INTEXT QUESTIONS 9.2

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1. Choose the correct answer :
    - (i) Stroke 'M' is thickened and halved, for (t/d)
    - (ii) The signs for rt and lt are generally written, (upward/downward)
    - (iii) The upward form of half length R is used, (initially/finally)
  2. Write the English words of the following shorthand outlines.
    - (i) .....
    - (ii) .....
    - (iii) .....
    - (iv) .....
    - (v) .....
    - (vi) .....
    - (vii) .....
- 

## 9.5 WHAT YOU HAVE LEARNT

In this sub-unit you have learnt that halving a stroke indicates the addition of t or d. A light stroke of one syllable is halved for t only and a heavy stroke for d only. Vowel signs to halved form are read next to the primary stroke. Half length 'h' when not joined to another stroke is always written upward. Upward 'r' is not halved when standing alone. The halving principle is not applied when a word ends with a vowel, when 't' or 'd' is immediately preceded by a triphone and in a few other cases where the fuller form is necessary to secure distinction of outline. Half length strokes are not written through the line for vowel indication.

In the second part of this sub-unit you have learnt that the four strokes M, N, L and R (downward) are halved and thickened for the addition of 'd'. The thickened form of L and R (downward) are not used if a vowel occurs between ld, rd. MP,

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MB and NG are halved when initially or finally hooked. Half-length upward R is used medially and finally for rd. The half-length st may be written downward or upward after shun. Two strokes of unequal length are not joined unless there is an angle at the point of junction. Half sized 't' or 'd' is always disjoined immediately following the strokes t or d.

In past tenses -ted or -ded is always indicated by half length t or d respectively. The halving principle is used in phraseography to represent the words 'it', 'not', 'word', 'would', 'to', etc.

## **9.6 TERMINAL QUESTIONS**

1. State the circumstances where halving principle is not employed.
2. Explain with suitable examples under which circumstances the halving principle is applied to M, N, L and R (downward).
3. What are the rules for halving:
  - a) one syllable words
  - b) more than one syllable words
4. In which cases the halving principle is applied in phraseography ? Support your answer with suitable examples.

## **9.7 ANSWERS TO INTEXT QUESTIONS**

### **9.1**

1.
    - i) 't' or 'd'
    - ii) Upward
    - iii) Upward
  2.
    - (i) .....
    - (ii) .....
    - (iii) .....
    - (iv) .....
-



(v) .....

(vi) .....

### **9.2**

1.
  - i) d
  - ii) upward
  - iii) finally
2.
  - i) grade
  - ii) edited
  - iii) desert
  - iv) report
  - v) belonged
  - vi) marred
  - vii) married

## **9.8 MATERIAL FOR ENRICHMENT**

For extended learning you may consult Chapter XXII and XXIII of Pitman Shorthand Instructor. Undertake repeated practice of the material related to this chapter and the exercises given in this lesson. Take dictation from any of your friends or family members.

## **9.9 THE DOUBLING PRINCIPLE**

Writing of any stroke in double the size of its normal length is called Doubling. Strokes are doubled to get easier and flexible outlines. You have already learnt about the full and half lengths of the stroke. Now you will learn about the double length form of strokes.

### **Position of double length strokes**

- a) All double length downstrokes are written through the line whether there
-

is a first, second or third place vowel, e.g.

painter ..... voter .....

tender ..... avoider .....

fitter .....

- b) All double length horizontal strokes will be written on the line if the first sounded vowel is of second or third place e.g.

motor ..... enter .....

metre ..... nature .....

neater .....

### **Doubling of straight strokes**

A straight stroke can be doubled for the addition of tr. dr. Thr. and ture when:

- i) another stroke occurs before it e.g.

folder ..... chapter .....

dictator ..... picture .....

- ii) has an initial circle e.g.

sector ..... scatter .....

spider .....

- iii) has a final hook or final joined diphthong e.g.

painter ..... printer .....

tutor .....

### **Doubling of Curved strokes**

- a) Curved strokes are doubled to indicate tr. dr. THr, ture, e.g.

enter ..... finder .....

order ..... father .....

mother ..... future .....

nature .....

- b) When a final circle 's' is attached to double length forms, it is to be read after tr. dr. THr, etc.

matters ..... letters ..... pictures .....

### **Doubling of stroke 'L'**

- a) Only tr. will be added when stroke 'L' standing alone is doubled. Circle 'S' can also be added. e.g.

letter ..... letters .....

litre ..... litres .....

- b) However, stroke 'L' can be doubled for tr. or dr. when it has attachments e.g.

lender ..... slaughter .....

holder ..... money-lender .....

***Remember the Three lengths of a stroke i.e. Full, Half and Double.***

The various lengths will be clear from the following examples:

#### **Full length**

pick

.....

#### **Half length**

picked

.....

#### **Double length**

picture

.....

---

fie	fight	fighter
.....	.....	.....
nay	neat	neater
.....	.....	.....
hang	hanged	hanger
.....	.....	.....

**DRILL EXERCISES**

1. Read and write five lines of each of the following:

.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
Tractor	Doubter	Operator
Rotator	Educator	Director
Typewriter	Another	Neither
Founder	Mender	Thunder
Louder	Father	Hinder
Pointer	Motor	Binder

---



.....

.....

3. Read and copy each sentence five times

1. ....

2. ....

3. ....

4. ....

5. ....

1. Sealed tenders are invited for the supply of Dry Chemical Powder.

2. Five people were killed in the encounter.

3. The Shorthand writer should always be ready to perform his duties.

4. The temperature will come down in the afternoon.

5. The slaughter house will remain closed after lunch time.

**4. Write in shorthand the following sentences five times each.**

1. The educators should take interest in the development of the country.

2. Please type a reminder on the typewriter. The matter can be had from the letter kept in the folder.

3. The absconder surrendered in the court of First Class Magistrate in the afternoon today.

4. You should not surrender to anybody or tender your resignation till you discuss the matter in detail with the Parliamentary Reports in the Central and State Legislatures.

5. Please put your signatures on the letter kept in the folder.

1. ....

---

2. ....
- .....
3. ....
4. ....
- .....
5. ....

---

### INTEXT QUESTIONS 9.3

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1. Fill in the blanks:
    - i) There are three lengths of a stroke i.e.. full, half and .....
    - ii) Straight stroke can be doubled for the addition of tr. dr. THr, and ture provided it has an ..... circle.
    - iii) Straight stroke can be doubled for the addition of tr. dr. THr, and ture provided another stroke occurs ..... it.
    - iv) Stroke 'L' standing alone is doubled for ..... only.
    - v) Stroke 'L' can be doubled for tr. or dr. when it has .....
  2. Fill in the correct answers :
    - i) Writing of any stroke in ..... the size of its normal length is called Doubling;  
(Half, Double)
    - ii) Final circle attached to double length forms is to be read ..... tr, dr, THr,  
(After, Before)
    - iii) If the first sounded vowel is of second or third place, all double length
-

horizontal strokes will be written ..... the line.

(on, through)

3. At which place the words 'motor' and 'metre' will be written ?

### **DOUBLE LENGTH MP/MB**

The character ..... mp-mb, when not initially or finally hooked, is doubled for the addition of -er. e.g.

bumper..... timber .....

chamber ..... jumper .....

amber..... september.....

temper.....

### **Alternative forms of MPR/MBR**

The strokes MP/MB can also be represented in hooked form when attached to any upstroke or K. e.g.

lumber..... cumber .....

camper..... hamper.....

### **Double length NG**

The character ..... NG, is doubled for the addition of kr./gr. It is used initially and when following a circle or an upstroke e.g.

inker..... sinker .....

linger..... winker .....

ranker.....

---



**Alternative form of NG-KR/NG-GR**

The stroke NG can also be represented in hooked form when attached to downstrokes or horizontal strokes e.g.

tanker .....	banker .....
finger.....	conquer .....
stronger .....	tinker .....

**9.10 EXCEPTIONS**

The doubling principle is not employed in the following cases:

- a) in past tenses of any word; e.g.

wonder.....	but wondered .....
enter.....	but entered .....
ponder.....	but pondered .....
matter.....	but mattered .....

- b) When a vowel follows final tr. dr. Thr. because the final vowel requires a final stroke for the vowel sign e.g.

anger.....	but angry.....
flatter.....	but flattery .....
inventor .....	but inventory .....
winter.....	but wintry .....

**Doubling Principle in Phraseography**

- a) The Doubling Principle is employed in phraseography for the addition of the following words:
-

a) There

b) Their

c) Other

d) Dear e.g.

In their.....

I am sure there is .....

Taking their.....

Some other way .....

In other times.....

In other words .....

My dear sir.....

Very dear .....

b) The doubling principle may also be, with advantage, used for writing Indian words e.g.

chowkidar.....

mazumdar .....

zamindar.....

thanedar .....

avtar.....

sardar .....

### **Short Forms/Grammalogues**

character.....

wonderful .....

and

wonderfully

rather.....

therefore .....

and writer

interest.....

## ANSWERS TO INTEXT QUESTIONS

### 9.3

1.    i)     double  
      ii)    initial  
      iii)   before  
      iv)    tr.  
      v)     attachments
2.    i)     double  
      ii)    after  
      iii)   on
3.    second place

## DRILL EXERCISES

1.    Read and write five lines of each outline.

.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
Temper	Temperature	Slumber
Pamper	Hamper	Linger
Hanger	Sinker	Ranker

---

Tanker	Hunger	Malingering
Canker	Drinker	
Feather		

2. Write shorthand outlines five lines each of the following words:

Anchor	Vamper	December
Longer	Rendered	Ordered
Hungered	Pantry	Secondary
Votary	Gentry	Wintered
Tendered	Boundary	Ultra
Pleasantry	Country	
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....		

3. Write shorthand outlines five lines each of the following phrases:

Making their way	Pending their decision
I know there is	I shall be there
My dear brother	My dear Sir
In some other way	I wish there were
In another case	In their own way

---

.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....
.....	.....	.....

4. Read and write five lines of each outline

.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

Has to be there

How can there be

I have been there

Some other

We have been there

My dear friend

Some other way

Shall be there

Or some other

Though there is

5. Try to read the following sentences

1. ....
  2. ....  
.....
  3. ....
-

.....

4. ....

.....

5. ....

6. Read, copy and transcribe the following pharagraph.

.....

.....

.....

.....

.....

.....

.....

.....

September is a pleasant month. Snow falls in December, temperature falls down and people remain inside. May, June and July are hot months and people go to hills on holiday resort. But as the prices have gone up, perhaps it will affect the tourist's traffic which will no longer be as it was last year. My dear Sir, we wish to draw your attention to our letter of tenth May. In this connection we have to inform you that as importers and exporters like yourselves we are at the tender mercy of our suppliers.

7. Write in shorthand the following paragraph:

The structure of our business is such that delays of this nature cause shortage of materials in stock and the inevitable loss of future orders from the disappointed customers. We must have all these materials by the `15th June at the latest in order to prepare our catalogues and deliver the proofs to the printers

by mid July. We therefore request that a definite delivery date rather than an explanation should be given to us.

.....

.....

.....

.....

.....

.....

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### INTEXT QUESTIONS 9.4

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1. Fill in the blanks :
    - (i) Stroke mp-mb when not hooked initially or finally is doubled for the addition of .....
    - (ii) Stroke mp-mb can also be represented in hooked form when attached to any ..... or 'K'.
    - (iii) Stroke NG is doubled for the addition of .....
    - (iv) Stroke NG can also be represented in hooked form when attached to ..... or horizontal stroke.
    - (v) Doubling Principle is not employed in ..... tense of any word.
    - (vi) Doubling principle is not employed when a vowel follows .....  
tr, dr
    - (vii) Doubling principle is employed in ..... for the addition of the words their, there other and dear.
-

## **9.11 WHAT YOU HAVE LEARNT**

Writing of any stroke in double the size of its normal length is called doubling. There are three lengths of a stroke i.e. full length, half length and double length. A straight stroke can be doubled for the addition of tr, dr, THr, and ture when another stroke occurs before it, has an initial circle or has a final hook or final joined diphthong. Curved strokes are doubled to indicate tr. dr. THr. Only tr. will be added when stroke 'L' standing alone is doubled. Circle 'S' can also be added to double length 'L'.

The character mp-mb, when not initially or finally hooked, is doubled for the addition of -er.. The strokes mb and mp can also be represented in hooked form when attached to any upstroke or 'K'. The character 'Ng'. is doubled for the addition of kr-gr. It is used initially and when following a circle or an upstroke. Stroke 'Ng' can also be represented in hooked form when attached to downstrokes or horizontal strokes.

Doubling principle is not employed in past tenses of any word or when a vowel follows final tr. dr. THr. because the final vowel requires a final stroke for the vowel sign.

The doubling principle is employed in phraseography for the addition of the words: their, there, other and dear.

## **9.13 MATERIAL FOR EXTENDED LEARNING**

Consult Chapter XXIV on 'Doubling Principle' from the Pitman Shorthand Instructor. Shorthand dictionary can also be used in case of difficulty. Take dictation at a speed of 40-50 words per minute from the drill exercises and terminal exercises given in this chapter.

## **9.12 TERMINAL QUESTIONS**

1. Explain with examples the use of doubling principle with straight strokes.
  2. Describe with examples the doubling of strokes mp/mb.
  3. Explain the circumstances under which doubling principle is not employed. Give examples.
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## ANSWERS TO INTEXT QUESTIONS

### **9.4**

1.     (i)     er
  - (ii)    upstroke
  - (iii)  kr, gr
  - (iv)   down stroke
  - (v)     past
  - (vi)    final
  - (vii)  phraseography
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